3.6 AIR QUALITY

3.6.1 Introduction

The CEQA requires an EIR to include a description of the environment in the vicinity of the project as it exists before the commencement of the project from both a local and regional perspective. With respect to air quality, this description includes those factors that influence the spread of pollutants, such as climatology and topographic effects, and the locations of proximate sensitive receptors who would most likely be affected by any air quality impacts. The regulatory background, including the health effects of various pollutants on which significance criteria are predicated, is also discussed, and the existing level of pollutants within the project area are disclosed. Unlike most projects that are still in the planning stage, the Shore Martinez terminal has been in operation since 1973. Shore marine terminal's emissions are a part of the ambient air quality in the local and regional area, and have been included in the Bay Area regional air quality planning process. Therefore, this section also includes a discussion of these emissions in association with the Shore Terminal's permitting process. Finally, the impacts associated with continued operations under the proposed 20-year lease period are analyzed.

3.6.2 Existing Conditions

3.6.2.1 Local Climatology

The climate of the San Francisco Bay Area is characterized as maritime, where extreme variations in ambient temperatures are rare. The climate is strongly influenced by the proximity of the Pacific Ocean and the irregularities in the inland topography.

During the warmer months, the high pressure system over the Pacific Ocean off the California coast results in negligible precipitation and northwest wind flows over the Bay Area. These northwesterly flows across the Pacific result in ocean surface movement off the California coast and promote the upwelling of cold water near the San Francisco coastline. As cool, moisture-laden air approaches the coast, further cooling occurs as it flows across this cold band. This cooling is often sufficient enough to result in condensation and the formation of fog and clouds in the region during the warmer months.

In winter, when the high pressure system in the Pacific weakens, high westerly winds aloft allow frequent weather systems to move inland across northern California. With the formation of a persistent high pressure system over the mountainous regions of northeast California, winter winds in the Bay Area are from the east and northeast.

A majority of the Bay Area's precipitation occurs from November to March. Average annual rainfall for the city of Martinez is 19.6 inches. During this period, inversions are either nonexistent or very weak. Stagnant conditions are rare due to the frequent replacement of air masses with each storm.

Weather patterns influence the dispersion of pollutants. Stagnant periods, which inhibit the dispersion of pollutants in the lower atmosphere, result from abnormally high temperatures and relatively stable conditions. On warmer days when the land-sea temperature differential is high, turbulence results from the passage of westerly winds over the irregular topography, improving the dispersion of pollutants.

3.6.2.2 Site Setting and Sensitive Receptors

The topography at the site is relatively flat with a small hill, elevation 194 feet, at the base of which the storage tanks are located. The site is located east of Interstate 680 on the Carquinez Strait, west of the Suisun Bay, in an industrial area of the city of Martinez. Elevations in excess of 900 feet are reached in the rugged hills of the Franklin Ridge area, located west of the city of Martinez. Topography to the northwest, across the Carquinez Strait (Carquinez Heights), is also quite hilly. These topographical features, located on either side of the Carquinez Strait, create a high-pressure gradient causing high wind flows through the Carquinez Strait. Mount Diablo is also a major regional topographic feature with an elevation of over 3,800 feet, located approximately 13 miles to the southeast in Mount Diablo State Park.

The project area is located in the San Francisco Bay east of Interstate 680 (Benicia-Martinez Bridge) in an industrial area of the city of Martinez. Ships call on the facility dock at the end of the wharf, which is about 1,700 feet from the shoreline. The nearest sensitive land uses are the residential areas located south of Pacheco Blvd. in the city of Martinez, southwest of the wharf approximately 2 miles from the bulk of wharf operations.

3.6.2.3 Air Quality Standards

Criteria Pollutants

The quality of the surface air (air quality) is evaluated by measuring ambient concentrations of pollutants that are known to have deleterious effects. The degree of air quality degradation is then compared to the current National and California Ambient Air Quality Standards (NAAQS and CAAQS). Because of the unique meteorological problems in the state, and because of differences in opinion by medical panels established by the EPA and the California Air Resources Board (CARB), there is considerable diversity between federal and state standards currently in effect in California. In general, the CAAQS are more stringent than the corresponding NAAQS. Those standards currently in effect in California are shown in Table 3.6-1. A detailed description of the history of the federal, state, and local regulatory background is included in Appendix D-1.

These standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those "sensitive receptors" most susceptible to respiratory distress, such as asthmatics, the

elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Table 3.6-2 provides a summary of the health effects from the major criteria air pollutants. It should be noted that healthy adults can tolerate occasional exposure to air pollutant concentrations above these minimum standards before adverse effects are observed.

Table 3.6-1
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	0.12 ppm[8] (235 µg/m^3)	Same as Primary Std.	Ultraviolet Photometry
	8 Hour	---		0.08 ppm (157 µg/m^3)		
Carbon Monoxide	8 Hour	9.0 ppm (10 mg/m^3)	Non-dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-dispersive Infrared Spectroscopy (NDIR)
	1 Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
Nitrogen Dioxide	Annual Arithmetic Mean	---	Gas Phase Chemilumine-scence	0.053 ppm (100 µg/m^3)	Same as Primary Std.	Gas Phase Chemiluminescence
	1 Hour	0.25 ppm (470 µg/m^3)		---		
Sulfur Dioxide	Annual Arithmetic Mean	---	Ultraviolet Fluorescence	0.030 ppm (80 µg/m^3)	---	Spectrophotometry (Pararosaniline Method)
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (365 µg/m^3)	---	
	3 Hour	---		---	0.5 ppm (1,300 µg/m^3)	
	1 Hour	0.25 ppm (655 µg/m^3)		---	---	
Respirable Particulate Matter (PM_{10})	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Stds.	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		50 µg/m^3		
Respirable Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard		65 µg/m^3	Same as Primary Stds.	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15 µg/m^3		
Visibility Reducing Particulates	8 Hour (10 a.m. to 6 p.m., PST)	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer-visibility of 10 miles or more due to particulates when the relative humidity is less than 70 percent.		No Federal Standards		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography	No Federal Standards		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence	No Federal Standards		
Lead	30-Day Average	1.5 µg/m^3	Atomic Absorption	---	---	High Volume Sampler and Atomic Absorption
	Calendar Quarter	---		1.5 µg/m^3	Same as Primary Std.	

Table 3.6-1 (Continued)
Ambient Air Quality Standards

[1] California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter-PM_{10}, $PM_{2.5}$, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded.

[2] National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

[3] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 mm of mercury. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[4] Any equivalent procedure which can be shown to the satisfaction of CARB to give equivalent results at or near the level of the air quality standard may be used.

[5] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

[6] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[7] Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

[8] New federal 8-hour ozone and fine particulate matter standards were promulgated by the EPA on July 18, 1997. The federal 1-hour ozone standard continues to apply in areas that violated the standard.

Table 3.6-2
Summary of Health Effects of the Major Criteria Pollutants

Air Pollutant	Adverse Effects
Ozone	➢ Eye irritation ➢ Respiratory function impairment ➢ Aggravation of respiratory and cardiovascular diseases
Carbon Monoxide	➢ Impairment of oxygen transport in the bloodstream, increase of carboxyhemoglobin ➢ Aggravation of cardiovascular disease ➢ Impairment of central nervous system function ➢ Fatigue, headache, confusion, dizziness ➢ Death at high levels of exposure ➢ Aggravation of some hear diseases (angina)
Nitrogen Dioxide	➢ Risk of acute and chronic respiratory disease
Suspended Particulates	➢ Increased risk of chronic respiratory disease ➢ Reduced lung function ➢ With SO_2, may produce acute illness ➢ Particulate matter 10 microns or less in size (PM_{10}) may lodge in and/or irate the lungs
Source: SCAQMD, CEQA Air Quality Handbook, 1993.	

Attainment Status

Table 3.6-3 provides a summary of the air quality status of the San Francisco Bay Area Air Basin (SFBAAB), relative to meeting the NAAQS and CAAQS. Non-attainment is a term used to indicate violations of the standard. As listed in Table 3.8-3, air quality in the SFBAAB is in non-attainment of the NAAQS and CAAQS for ozone (O_3). The SFBAAB is also in non-attainment of the CAAQS for particulate matter (PM_{10}).

Table 3.6-3
Federal and State Attainment Status for the San Francisco Bay Area Air Basin

Pollutant	Federal Classification	State Classification
Ozone – One Hour	Moderate Non-Attainment[1]	Serious Non-Attainment[2]
PM_{10}	Unclassified/Attainment	Non-Attainment
CO	Unclassified/Attainment	Attainment
NO_2	Unclassified/Attainment	Attainment
SO_2	Unclassified	Attainment
Lead	No Designation	Attainment

Source: www.epa.gov/region9/air/maps/maps_top.html and www.arb.ca.gov/desig/adm/adm.htm
[1] San Francisco Bay Area is designated "Not Classified/Moderate" under 23 U.S.C. Section 104(b)(2) and has a 2006 attainment deadline.
[2] Classifications for ozone non-attainment areas are provided in Health and Safety Code Section 40921.5. Serious non-attainment is defined as 0.13 to 0.15 ppm, inclusive.

3.6.2.4 Air Monitoring Data Near the Shore Terminal

The Bay Area Air Quality Management District (BAAQMD) operates a regional air monitoring network for determination of compliance with air quality standards. The network consists of 30 monitoring stations used to measure the ambient concentrations of pollutants for which air quality standards have been established. Each station monitors a combination of gaseous and/or particulate pollutants either on a continuous or every 6-day basis. The data are used to describe the air quality within the surrounding community and to determine the attainment status of the air basin.

Indications of criteria pollutant levels near the project area can be obtained by reviewing recent data collected at nearby BAAQMD monitoring stations. Three monitoring stations near the study area were selected to provide a general profile of the air quality within the study area. The air monitoring station closest to the project site is located in South Concord on Treat Boulevard, whereas the Shore marine terminal is located approximately 8 miles north in an industrial area on the shoreline. Additional air monitoring data were collected from the Pittsburg Station, located approximately 12 miles east of the project site near the shoreline, and the Vallejo Station, located approximately 9 miles northwest of the project site in Solano County. The Pittsburg Station provides the most representative data for the Shore terminal due to its proximity and similar location. A 3-year summary of the ambient air quality data collected at these stations is presented in Table 3.6-4.

Table 3.6-4
Air Quality Summary

Standards	Monitoring Stations								
	Concord – 2975 Treat Blvd.			Pittsburg – 10th St.			Vallejo – 304 Tuolumne St.		
	1999	2000	2001	1999	2000	2001	1999	2000	2001
OZONE STANDARD									
Maximum 1-Hr Concentration (ppm)	0.156	0.138	0.134	0.098	0.107	0.118	0.113	0.079	0.091
Month of Max. 1-Hr Concentration	July	May	July	July	May	July	July	June	May
Days > CAAQS (0.09 ppm)	8	2	6	2	1	2	4	0	0
Days > NAAQS (0.12 ppm)	2	1	1	0	0	0	0	0	0
NO_2 STANDARD [1]									
Maximum 1-Hr Concentration (ppm)	0.079	0.074	0.065	0.087	0.054	0.062	0.083	0.064	0.057
Days > CAAQS (0.25 ppm)	0	0	0	0	0	0	0	0	0
Annual Average (0.053 ppm)	0.018	0.016	0.015	0.015	0.013	0.014	0.014	0.013	0.013
PM_{10} STANDARD									
Maximum 24-Hr Concentration ($\mu g/m^3$)	63.8	53.8	105.8	72.0 [3]	55.5	97.7	83.7	53.0	86.1
Calc. Days > CAAQS (50 $\mu g/m^3$) [2]	18	6	12	12 [3]	6	18	18	6	18
Days > NAAQS (150 $\mu g/m^3$)	0	0	0	0 [3]	0	0	0	0	0
Annual Geometric Mean (30 $\mu g/m^3$)	18.1	16	17	20 [3]	13	16	16	13	16
Annual Arithmetic Mean (50 $\mu g/ m^3$)	20.8	---	---	28.8 [3]	---	---	19.3	---	---
CO STANDARD									
Maximum 8-Hr Concentration (ppm)	3.11	2.70	2.67	3.27	2.68	2.44	5.49	5.11	4.09
Days > CAAQS (9.0 ppm)	0	0	0	0	0	0	0	0	0
Days > NAAQS (9.0 ppm)	0	0	0	0	0	0	0	0	0
$PM_{2.5}$ STANDARD									
Maximum 24-Hr Concentration ($\mu g/m^3$)	56.6	52.6	68.2	---	---	---	90.5	60.1	90.1
Days > NAAQS (65 $\mu g/m^3$)	0	0	1	---	---	---	1	0	2
Annual Arithmetic Mean (15 $\mu g/ m^3$)	12.0	10.9	10.2	---	---	---	14.1	11.6	12.5
SO_2 STANDARD									
Maximum 24-Hr Concentration (ppm)	0.012	0.005	0.005	0.010	0.009	0.012	0.008	0.006	0.004
Days > CAAQS (0.04 ppm)	0	0	0	0	0	0	0	0	0
Annual Arithmetic Mean (0.030 ppm)	0.002	0.002	0.001	0.002	0.002	0.003	0.001	0.002	0.001

Source: CARB Air Quality Data CD, 2000 (1980-1999) and CARB web site, http://www.arb.ca.gov/adam/, Accessed November 2002.

[1] No Federal (1-hour) NO_2 standard.

[2] Days above the state standard (calculated): Because PM_{10} is monitored approximately once every 6 days, the potential number of violation days is calculated by multiplying the actual number of days of violations by six.

[3] Data presented represents only 62% yearly coverage.

As indicated in Table 3.6-4, the air monitoring stations in the area near the Shore marine terminal site continue to experience ozone exceedances. The Concord Station recorded six violations in 2001 of the CAAQS and one violation of the NAAQS. The Pittsburg Station recorded fewer ozone violations with two or less violations per year from 1999 through 2001 of the CAAQS and no violations of the NAAQS. The Vallejo Station had the fewest ozone exceedances, having only four violations of the CAAQS in 1999, no violations in 2000 or 2001, and no violations of the NAAQS in the past three years. With regard to fine particulate matter (PM_{10}), the calculated number of violations of the CAAQS at the Concord Station was eighteen (18) in 1999, six (6) in 2000, and twelve (12) in 2001. The Pittsburg Station shows a similar number of calculated violations with twelve (12) in 1999, six (6) in 2000, and eighteen (18) in 2001. The Vallejo Station also shows a similar number of calculated violations with eighteen (18) in 1999, six (6) in 2000, and eighteen (18) in 2001. There were no recorded violations of the NAAQS for PM_{10} during the four-year sample period at the three air monitoring stations. With regard to fine particulate matter ($PM_{2.5}$), one violation was recorded at

the Concord Station and two violations were recorded at the Vallejo Station, both in 2001. There were no state or national violations recorded for nitrogen dioxide, carbon monoxide, or sulfur dioxide.

3.6.2.5 Existing Conditions at the Shore Marine Terminal

The components of the marine terminal and vessels that are sources of emissions are discussed below. Actual emissions quantities are presented and analyzed in the impacts analysis in Section 3.6.3 below.

Vapor Control System

Like all facilities that deal with the movement of liquid materials, the wharf includes a large number of pumps, valves, flanges, and pressure relief devices. If ignored, these fittings can develop small leaks that ultimately release reactive organic gas (ROG) emissions into the air. The Shore marine terminal vapor control system (VCS) was installed in 1991 and updated in 1993 and complies with the U.S. Coast Guard (USCG) regulations 33 CFR 154 for VCS operations. The system also complies with BAAQMD Regulation 8-44 (Organic Compounds, Marine Vessel Loading Terminals) which limits hydrocarbon emissions to the atmosphere from marine vessels being loaded under certain conditions (e.g., loading with high vapor pressure products). In the absence of vapor controls, hydrocarbon vapors escape from the cargo compartment when they are displaced during liquid product loading. The VCS also meets the CSLC's Structural Requirements for Vapor Control Systems at Marine Terminals (CCR Title 2, Division 3, Chapter 1, Article 5.4).

Loading Operations

A primary source of precursor organic compound (POC) emissions from Shore's marine terminal operations is from loading activities. Loading losses occur as POC vapors in "empty" cargo tanks are displaced to the atmosphere during liquid product loading. The emissions are a composite of vapors generated from the evaporation of residual liquids and vapors formed in the tank as new liquids are loaded. The quantity of vapors depends on the physical and chemical characteristics of both the previous cargo and the new cargo and the methods of loading.

The vapor control system is used to capture and destroy POC emissions from the loading of petroleum liquids.

Crude Oil Ballasting

Ballasting is the practice of loading several cargo tank compartments with seawater after the cargo has been offloaded. Ballasting of cargo tanks reduces the quantity of emissions emitted during subsequent tanker loading. During the ballasting process, POC emissions escape to the atmosphere as the vapors from nonsegregated tanks are displaced with "ballast" water. These emissions are not controlled by the vapor control system.

Fugitives (Pumps, Valves, and Flanges)

There are numerous pipelines associated with Shore's marine terminal that transport petroleum liquids between the upland facility and the wharf. The pumps, valves, and flanges associated with these pipelines are sources of fugitive emissions of POC. The leakage from these components is a function of the liquid being transported and the effects of variables, such as pressure, vibration, friction, heat, and corrosion.

Vessels

Vessels (tankers and barges) that call at Shore terminal contribute indirect emissions to terminal operations. These emissions are generated from the combustion of fuel oil by the vessel engines and generators as they travel, as well as emissions generated from auxiliary engines used to provide electrical and accessory power while ships are "hoteling" at the wharf.

3.6.3 Impacts Analysis and Mitigation Measures

Impact Significance Criteria

Permitted Emissions

The air quality impacts of the Proposed Project would be considered adverse and significant if Shore Terminals does not comply with the terms of the Permit to Operate granted by the BAAQMD. The CEQA Guidelines state the following: "Sources of air pollutants emissions complying with all applicable District regulations generally will not be considered to have a significant air quality impact" (CEQA Guidelines, Section 15064(l)). Stationary sources that are exempt from District permit requirements, because they fall below emission thresholds for permitting, will not be considered to have a significant air quality impact (unless it is demonstrated that they may have a significant cumulative impact).

Non-Permitted Emissions

In accordance with the BAAQMD CEQA Guidelines (Guidelines) (April 1996), non-permitted emissions could have a significant, adverse impact if they:

- Contribute to an exceedance of localized CO emissions in excess of the CAAQS of 20 ppm for 1-hour or 9 ppm for 8 hours;
- Result in emissions which exceed the following emission thresholds:
  - ROG, 15 tons/year, 80 lbs/day,
  - NO_x, 15 tons/year, 80 lb/day,
  - PM_{10}, 15 tons/year, 80 lbs/day;

- Allow land uses that create objectionable odors;

- Expose sensitive receptors (including residential areas) or the general public to substantial levels of toxic air contaminants; or

- Potentially result in the accidental release of acutely hazardous air emissions.

Cumulative Emissions

Cumulative impacts (see Section 4.0 of this EIR) are considered significant, based on the Guidelines definition as follows: "Any Proposed Project that would individually have a significant air quality impact would also be considered to have a significant cumulative impact."

Construction Emissions

Construction activities related to the Proposed Project or alternatives would be adverse and significant if the activities do not comply with the criteria defined in the BAAQMD CEQA Guidelines. The BAAQMD CEQA Guidelines emphasize a qualitative approach to construction emissions, focusing on comprehensive control measures rather than a detailed quantification of emissions. Gaseous emissions from construction equipment (i.e., carbon monoxide and ozone precursors) are included in the emission inventory that is the basis for regional air quality plans, are not expected to impede attainment or maintenance of ozone and carbon monoxide standards by the Bay Area, and are therefore not subject to impact criteria. Construction impacts are generally short-term in nature and are typically associated with the production of PM_{10}. The District provides viable mitigation for PM_{10} associated with dust, not with other emissions such as exhaust. The BAAQMD CEQA Guidelines do set forth a series of dust abatement procedures to which adherence constitutes mitigation to less than significant levels, regardless of the actual emissions that may occur.

3.6.3.1 Shore Marine Terminal Routine Operations and Potential for Accident Conditions

Impact AQ-1: Construction Associated with Continued Operations

No major construction is proposed as part of the 20-year lease. Minor upgrades, maintenance and repairs would be less than significant (Class III).

The Proposed Project does not involve any new construction to the wharf. Upgrades, maintenance and repair expected as part of the 20-year lease renewal are considered minor in nature and would not contribute significantly to the baseline emissions. Therefore, there is no impact from construction associated with continued operation of the marine terminal. Shore Terminals is required to notify the CSLC of major repairs, which CSLC staff reviews for environmental applicability, among other criteria.

AQ-1: No mitigation is required.

Impact AQ-2: Permitted Emissions Associated with Continued Operations with No Increased Throughput

Measured and calculated criteria pollutant emissions are below existing yearly BAAQMD permitted levels. Continued operation of the marine terminal at current throughput levels would not result in air quality emissions impacts (Class III).

Permitted emissions include those emissions that are considered a part of the ambient air quality in the local and regional area, and have been included in the Bay Area regional air quality planning process. The Shore marine terminal wharf emissions associated with operation of the vapor recovery/thermal oxidizer, loading operations, ballasting, and fugitive sources (pumps, valves, and flanges) are covered under permits to operate pursuant to the requirements of BAAQMD Regulation 2 (BAAQMD 2001). Tanker maneuvering and hoteling, tanker pumping, tugboats, etc., are calculated, as described in the Title V Permit for the Shore Terminals' facility, and included as part of the permitted emissions of the entire facility (wharf and upland tankage), but are not individually permitted by the BAAQMD. Shore Terminals facility emissions from all sources (storage tanks, tank truck loading rack, marine vessel wharf, oily water separators, fixed roof tanks, and direct fired heater), including organic loading emissions, are limited to the following (BAAQMD 2001):

- POC: 65.1 tons/year
- CO: 52.2 tons/year
- NO_x: 129.5 tons/year
- SO_2: 83.5 tons/year
- PM: 25.8 tons/year

Emissions are influenced by a number of variables, most significantly product throughput and mode of transport. All products received by the facility are loaded into storage tanks. Emissions of vapors expelled from the loading procedure are controlled using the vapor recovery system, which consists of two vapor combustion units called thermal oxidizers, and associated piping from fixed roof tanks and the marine vessel loading area. Incoming liquid products shipped from the terminal into a vessel, railcar, or other container displace existing vapors in the tanks. Products shipped from the terminal into a pipeline do not displace vapor at the facility, and therefore do not cause additional emissions.

The Shore facility uses continuous emission monitors and source sampling to provide computerized monthly criteria pollutant emission inventory to the BAAQMD. It should be noted, however, that not all emissions from the facility are required to be measured by Shore (Thomas Reid Associates 1994). Specifically, no pollutants other than POC (e.g., NO_x, CO, PM_{10}) from the vapor combustion units are subject to the permit limits. This is because "secondary pollutants" which are a direct result of the use of an abatement device complying with BACT are exempt under BAAQMD Regulation 2, Rule 2, Section 1212. Furthermore, emissions of CO and PM_{10} need not be calculated

because the BAAQMD has previously evaluated the facility's equipment and deemed that these pollutants would be emitted in less than significant amounts (Thomas Reid Associates 1994). The limit set by the BAAQMD was determined to be sufficient to account for these emissions. Other sources of CO and PM_{10} include indirect emission sources, such as tug combustion emissions, tanker hoteling, tanker transit, and tanker pumping. These indirect emissions are not permitted, however, they are calculated per the permit conditions specified in the Shore Terminals Title V Permit and considered as part of the overall emissions of the facility.

Results of the emissions inventory for 2000-2001 (recent years for which 12 months of data were available) are provided in Table 3.6-5. This inventory is based on the number of marine vessel calls and product throughput at the marine terminal for 2000 and 2001 as shown in Table 3.6-6. (Note that these years are higher in vessel calls than the baseline year of 2002 and do not exceed permitted emissions, thus baseline year emissions would not exceed permitted emissions.)

As can be seen in Table 3.6-5, the measured and calculated criteria pollutant emissions are well below yearly permitted levels specified by the BAAQMD. Thus, continued operation of the marine terminal at recent and current throughput levels would not result in air quality emissions impacts (Class III).

AQ-2: No mitigation is required.

Impact AQ-3: Non-Permitted Emissions Associated with Continued Operations

Since the facility is already operational, worker commute emissions are already part of ambient conditions, thus non-permitted emissions impacts are less than significant (Class III).

Worker travel contributes to non-permitted operational emissions. Since the facility is already operational, these worker commute emissions are already part of ambient conditions. Per Shore's Wharf Operations Manual, the minimum number of personnel required to be on duty during marine transfer operations is two, one Wharf Technician (Terminal Person-In-Charge) and one Terminal Technician (Shore Terminals LLC 1998). In addition, Shore requires that at least one crewperson be aboard the tank vessel at all times while moored at the berth (Vessel Person-In-Charge). Other personnel may be on the wharf for maintenance or to assist with operations only if required. Thus, the average number of people required to operate the marine terminal is approximately 2-3, with minor fluctuations depending on operations and maintenance needs. No changes to worker commutes or the number of workers required for the operation of the wharf are expected over the period of the lease. As such impacts associated with non-permitted emissions are less than significant (Class III).

AQ-3: No mitigation is required.

Table 3.6-5
2000-2001 Shore Terminal Annual Emissions Inventory (tons) [a, c]

Source	2000			2001		
	POC	NO_x	SO_2	POC	NO_x	SO_2
Ballast Emissions	3.40	---	---	7.26	---	---
Vapor Control Equipment	2.64	---	---	1.45	---	---
Fugitive Emissions	1.6	---	---	1.6	---	---
Tank Standing Losses	1.04	---	---	1.43	---	---
Tank Withdrawal Losses	2.11	---	---	1.57	---	---
Total Non-Loading Emissions	10.79	---	---	13.31	---	---
Cargo Loading Emissions	19.76	---	---	0.57	---	---
Total Direct Emissions	**30.55**	**---**	**---**	**13.88**	**---**	**---**
Tanker Pumping Emissions	2.06	11.30	21.09	1.39	9.75	9.59
Tanker Transit Emissions	1.49	17.24	11.49	2.82	32.09	15.58
Tanker Hoteling Emissions	0.22	2.35	0.70	0.29	3.06	0.96
Tug Combustion Emissions	0.72	31.61	3.93	0.64	28.37	3.53
Total Indirect Emissions [b]	**4.49**	**62.5**	**37.2**	**5.14**	**73.27**	**29.66**
TOTAL EMISSIONS	**35.0**	**62.5**	**37.2**	**19.0**	**73.3**	**29.7**
Maximum Permitted Emissions	**65.1**	**129.5**	**83.5**	**65.1**	**129.5**	**83.5**

Source: Emission Calculations Quarters 1-4, Years 2000-2001, Shore Terminals LLC.

Notes:

(a) Marine terminal facility only, which excludes pipeline, truck, and/or rail activities.

(b) Indirect Emissions are not permitted, however they are calculated per the permit conditions specified in the Shore Terminals Title V Permit and considered as part of the overall emissions of the facility.

(c) Emissions of CO and PM_{10} were not provided. The District calculates CO based on annual throughput reports provided by Shore Terminals LLC. The District Source Emissions report, dated October 30, 2001, listed 2.16 lbs/day of CO. No calculation was made for PM_{10}. (Shore 2003).

Table 3.6-6
2000-2001 Marine Terminal Activity

Marine Terminal	2000	2001
Total Product Received	24,327 Mbbls	18,199 Mbbls
Total Product Shipped	3,991 Mbbls	3,122 Mbbls
Total Product In/Out	28,318 Mbbls	21,321 Mbbls
Number of Vessel Calls	224	219

Source: Emission Calculations Quarters 1-4, Years 2000-2001, Shore Terminals LLC.

Impact AQ-4: Dredging Operations Associated with Continued Operations

Dredging is a permitting activity that is calculated into the Bay Area's baseline conditions. Air quality emissions will not increase from continued dredging activities over the term of the proposed 20-year lease, and are considered less than significant (Class III).

In addition to wharf and ship/barge emissions, Shore conducts dredging on the north side of the wharf approximately every three (3) years to maintain an operating depth of minus 38-feet mean low low water (MLLW). The Department of the Army granted Shore Terminals LLC a permit, which allows for a maximum of 10,000 cubic yards of material to be removed over a 10-year period to maintain safe, navigable depths at the terminal berth. Dredging activities are performed using a clamshell and barge with disposal at the authorized Carquinez (SF-9) disposal site or another site recommended by the San Francisco Bay Dredged Materials Management Office (DMMO). Typically, dredging involves the removal of approximately 6,000 cubic yards of sediment about every three years (approximately 3-6 days of dredging). The quantity of material to be dredged at the Shore wharf is minimal compared to other area facilities (for example, the ConocoPhillips Rodeo wharf may dredge up to 90,000 cubic yards annually and the Chevron Richmond may dredge up to 350,000 cubic yards annually). The dredge and generators on-board both the dredge and tug are normally permitted under the BAAQMD's stationary source regulations. The tug and crew are mobile sources of emissions and as such are considered un-permitted emissions, but because these mobile sources routinely provide assistance to dredging operators, are considered as part of ambient conditions. Because permitted dredging activities are calculated into the Bay Area's baseline conditions, air quality emissions will not increase from continued dredging activities over the term of the proposed 20-year lease, and are considered less than significant (Class III).

AQ-4: No mitigation is required.

Impact AQ-5: Emissions Associated with Continued Operations with Increased Future Throughput

Tanker pumping, transit, and/or tug combustion emissions could allow for an increase in throughput at the marine terminal. Thus, future operational emissions (both indirect and direct) have the potential to exceed daily and yearly significance thresholds (existing permit limits) and result in a significant adverse (Class II) impact.

Over the term of the 20-year lease, market conditions could drive the need to increase throughput through the marine terminal to a maximum of 325 annual vessel calls. No modifications to the wharf are proposed, as the wharf is capable of handling the increased number of vessels. The 325 maximum vessel calls would be based on an associated increase in upland tankage storage, which would be limited to an additional 2 million barrels (including the 300,000 bbls of tankage currently under construction) over existing capacity due to limited available land. Future tank additions at the upland facility would create the potential for increased emissions indirectly associated with increased wharf activity. Construction and operation of increased upland facilities would be subject to local (City of Martinez) CEQA review and BAAQMD permitting.

To address potential emissions increases associated with increases in wharf throughput, the maximum throughput was calculated that would allow the facility to operate before exceeding the significance criteria. A similar methodology was used in the *Wickland Oil Martinez Marine Terminal Expansion DEIR* (Thomas Reid Associates

1994, Appendix C). Table 3.6-7 provides a summary of the throughput estimated to maintain emissions below the significance criteria of 15 tons/year for ROG and NO_x. These emissions are based on the annual emissions provided in Table 3.6-5, and the total product shipped and received provided in Table 3.6-6.

Table 3.6-7
Maximum Annual Indirect Emissions Inventory

Source	2000 Emissions (tons/MMbbls)			2001 Emissions (tons/MMbbls)		
	POC	NO_x	SO_2	POC	NO_x	SO_2
Tanker Pumping Emissions	0.073	0.399	0.745	0.065	0.457	0.450
Tanker Transit Emissions	0.053	0.609	0.406	0.132	1.505	0.731
Tanker Hoteling Emissions	0.008	0.083	0.025	0.014	0.144	0.045
Tug Combustion Emissions	0.025	1.116	0.139	0.030	1.331	0.166
Total Indirect Emissions (tons/MMbbls)	**0.159**	**2.207**	**1.314**	**0.241**	**3.437**	**1.391**
Total Throughput to maintain less than 15 tons/year	**94.6**	**6.80**	**11.4**	**62.2**	**4.36**	**10.8**

As shown in Table 3.6-7, the criteria pollutant emitted in the greatest quantity is NO_x from tanker transit, pumping, and tugboat activities. Based on the quantity of product transferred (total product in/out) at the marine terminal in 2000 and 2001, between 2.2 and 3.4 tons NO_x are emitted per each million barrels transferred. Assuming an average of 2.8 tons NO_x per million barrels transferred, to maintain non-permitted emissions below the significance criteria of 15 tons/year, the increase in throughput would need to remain below 5.3 million barrels per year (Refer to Appendix D-2 for detailed calculations). However, limiting tanker pumping, transit, and/or tug combustion emissions could allow for an increase in throughput at the marine terminal. Thus, future operational emissions (both indirect and direct) have the potential to exceed daily and yearly significance thresholds and result in a potentially significant adverse (Class II) impact.

Mitigation Measures for AQ-5:

AQ-5: Mitigation should be focused on the use of best available control technology (BACT) available at the time of any expansion of the upland facility. Increased operations would require additional permitting through the BAAQMD, which would set limitations on allowable emissions levels and require offsets as necessary.

Rationale for mitigation: Use of BACT and compliance with BAAQMD limitations would reduce the potential for the exceedance of pollutant limitations. Through the use of improved technology and BAAQMD requirements, the impact would be reduced to less than significant.

Impact AQ-6: Odors

The Shore marine terminal does not emit odors that are/have been reported in the local area. No sensitive receptors are located in the area. Impacts are less than significant (Class III).

As noted above, an impact may be adverse and significant if the project emits odors that create a nuisance at local receptor locations. The primary source of odors from the Shore marine terminal would be fugitive POC emissions escaping to the atmosphere during loading and unloading operations. These odors are typically removed in the vapor recovery system, which captures and destroys the POC in a thermal oxidizer. POCs are broken down to largely odorless compounds of water and carbon dioxide. Between February 1999 and April 2001, no odor or nuisance complaints were received by the BAAQMD concerning the Shore marine terminal. An increase in odors would not be expected due to the continued operation of the Shore marine terminal under the conditions of the proposed 20-year lease. Therefore, no impact is associated with the Proposed Project.

AQ-6: No mitigation is required.

Impact AQ-7: Hazardous and Toxic Pollutants

The Shore terminal is in compliance with the BAAQMD permitting for hazardous and toxic pollutants. Impacts are less than significant (Class III).

Because the wharf and its operations have been permitted through the BAAQMD, Shore has satisfied the requirements related to both toxic air contaminants and accidental release of acutely hazardous air emissions. Necessary hazardous and toxic pollutant modeling, as well as necessary contingency measures, have been submitted as part of the permitting process and are on file with the BAAQMD. The BAAQMD would not issue appropriate permits without adequate documentation and mitigation. Impacts are less than significant (Class III).

The health risks associated with the proposed 20-year lease of the Shore Terminals' Marine Facility are discussed in the Operational Safety/Risk of Accidents analysis presented in Section 3.1.3.

AQ-7: No mitigation is required.

3.6.4 Alternatives

3.6.4.1 No Project Alternative

Impact AQ-8: Effects on Air Quality with No New Shore Terminals Lease

The marine terminal operations of Shore Terminals would be transferred to three other area terminals, resulting in a small shift in emissions from Shore to these terminals. Impacts are less than significant (Class III). Shore has no responsibility for those facilities.

The No Project alternative would require Shore to cease operation of the marine terminal, which currently serves nearby refineries between Rodeo and Martinez. Without the Shore marine terminal, other area marine terminals would be required to increase inbound and outbound shipments to meet regional refining demands. Increasing the number of shipments at the other area marine terminals would cause a small shift in emissions from the Shore Facility to other Bay Area terminals where there would be an incremental increase in air emissions at those marine terminals. However, since Shore's marine terminal is one of the furthest wharves within the Bay Area/Carquinez Strait, air emissions due to the distance traveled by tanker may be incrementally reduced for the No Project alternative. This beneficial reduction would be so small and would be offset by small increases in operations at the other terminals. The differential in impacts would be less than significant (Class III) when compared with overall regional emissions. Any increase in operations at other area marine terminals would be subject to separate CEQA review. Shore has no responsibility for actions at other terminals.

Decommissioning and/or deconstruction of the wharf, or any other proposed reuse of the wharf, would also require a separate CEQA review. The wharf is constructed over water. Site demolition would require no earth movement, and would therefore produce only very minor quantities of dust and associated PM_{10}. Furthermore, site access is paved and no off-road travel would occur. Site demolition may also occur from the waterside with removal by barge. Some associated diesel emissions may be associated with heavy equipment but would be of short duration, and are not considered by the District as significant. As noted in the BAAQMD CEQA Guidelines, short-term construction does not produce significant adverse air quality impacts as long as dust abatement is included. Any air quality emissions associated with decommissioning and/or deconstruction of the wharf would be expected to be less than significant (Class III).

AQ-8: No mitigation is required.

3.6.4.2 Increased Use of Existing Pipelines for Continued Operation of Upland Facility Alternative

Impact AQ-9: Continued Shore Upland Operations via Existing Pipelines

The upland facility may have increased throughput, and operational emissions (both indirect and direct) have the potential to exceed daily and yearly significance thresholds and result in a potentially significant adverse (Class II) impact.

The Shore upland facility currently receives and distributes petroleum products by marine vessels and land-based pipelines. For this alternative, it is assumed that the Shore upland facility would continue to function utilizing only land-based pipelines. Connections for moving oil to and from the Shore upland facility to the Shell Martinez, Valero Benicia, and Tesoro Amorco wharves are already in place. Therefore, no construction would be required to use these pipelines. However, these wharves would need to increase shipping operations. Increasing the number of shipments at these wharves would cause an incremental increase in air emissions. On the other hand, since Shore Terminals is one of the furthest upstream wharves within the Carquinez Strait, air emissions due to tanker transit distances may be slightly reduced. The potential increase in permitted (direct) and non-permitted (indirect) emissions at the Shell Martinez, Valero Benicia, and Tesoro Amorco wharves may require a separate CEQA review. Overall Bay Area emissions changes would be less than significant (Class III), since emissions would shift from Shore to one or more of the other facilities. Shore would have no responsibility for operations at other terminals.

This alternative also considers an increase in the capacity of Shore's upland tankage facilities, limited to an additional 2 million bbls over that presently in use/in construction. As discussed in Impact AQ-5 above, as long as increased throughput would remain within existing permit limitations, no emission exceedances would occur. Based on rough calculations, the increase in throughput would need to remain below 5.3 million bpy so as not to exceed permitted NO_x limitations. Since this may not occur, future operational emissions (both indirect and direct) have the potential to exceed daily and yearly significance thresholds and result in a potentially significant adverse (Class II) impact. Increased capacity of the upland facility would be subject to local (City of Martinez) CEQA review.

Non-permitted emissions for the upland facility include mobile operations associated with heavy trucks involved in deliveries or product export. A minimal number of trucks currently deliver material to the facility. In 2001 and 2002 (through November), there were 1,851 and 1,360 trucks, respectively, that loaded diesel at the truck rack for delivery to local users, primarily for agricultural uses. Emissions associated with any increases in heavy trucks involved in deliveries or product export are associated with the operation of the upland facility and would also be subject to local CEQA review.

<u>Mitigation Measures for AQ-9</u>:

AQ-9: Implement mitigation measure AQ-5.

Rationale for mitigation: Shore shall use BACT and comply with BAAQMD limitations to reduce the potential for the exceedance of pollutant limitations. Through the use of improved technology and BAAQMD requirements, the impact would be reduced to less than significant.

3.6.4.3 Modification of Existing Pipelines for Continued Operation of Upland Facility Alternative

Impact AQ-10: Continued Shore Upland Operations via Modifications to Existing Pipelines

In the BAAQMD CEQA Guidelines, short-term construction does not contribute significant adverse air quality impacts as long as dust abatement is practiced. The upland facility may have increased throughput, and operational emissions (both indirect and direct) have the potential to exceed daily and yearly significance thresholds and result in a potentially significant adverse (Class II) impact.

Shore has connections to the inactive PG&E fuel oil line that could transfer crude oil to and from Shore with possible connections to Shore Selby, ConocoPhillips Rodeo, and the Chevron Richmond. To use this line would require examination of pipeline integrity, construction to reconnect the segment in the city of Martinez, and construction to provide connections to the marine terminals at Shore Selby, ConocoPhillips Rodeo, and the Chevron Richmond. In comparison to the Proposed Project that would have no construction emissions, short term air quality impacts for construction exhaust and fugitive dust emissions would occur. In the BAAQMD CEQA Guidelines, short-term construction does not contribute significant adverse air quality impacts as long as dust abatement is practiced. Mitigation measures to reduce fugitive dust emissions have been identified by the BAAQMD and are detailed in the BAAQMD CEQA Guidelines, Table 2 (BAAQMD 1999). Additional best management practices could be applied to reduce exhaust emissions from construction equipment, including: maintaining construction equipment in tune per manufactures' recommendations; using Catalyzed Diesel Particulate Filters (CDPF), Ultra-Low-Sulfur Diesel (ULSD) fuel with a sulfur content of 15 parts per million (ppm) or less, and diesel engines certified to EPA and CARB 1996 or newer; and limiting equipment idle time.

For operations, in comparison to the Proposed Project, use of other area wharves would pose slight increases in emissions that would shift from Shore to one or more marine terminal facilities. Overall Bay Area emissions changes would be less than significant (Class III). Shore would have no responsibility for operations at other terminals.

As for Impact AQ-9, above this alternative also considers an increase in the capacity of Shore's upland tankage facilities, and future operational emissions (both indirect and direct) have the potential to exceed daily and yearly significance thresholds and result in a potentially significant adverse (Class II) impact.

Mitigation Measures for AQ-10:

AQ-10: Implement mitigation measure AQ-5.

Rationale for mitigation: Shore shall use BACT and comply with BAAQMD limitations to reduce the potential for the exceedance of pollutant limitations. Through the use of improved technology and BAAQMD requirements, the impact would be reduced to less than significant.